

Notice of Allowability

Application No.

10/826,114

Examiner

PHUNG-HOANG J. NGUYEN

Applicant(s)

HARDY ET AL.

Art Unit

2614

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/25/2008.
2. ☒ The allowed claim(s) is/are 1, 3-48 and 50 renumbered 1-48.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Paul Harrity on 10/29/2008 and 11/06/2008.
3. Claims 1, 3, 7-8, 14, 16-17, 19, 21, 23-28, 46-48 and 50 have been amended as follow:

Claim 1. (currently amended) ~~[[A]] An automated~~ A method, performed by one or more devices, for monitoring perceived quality of a packet-switched voice service in a network, comprising:

receiving a plurality of packetized voice ~~communication~~ communications via the packet-switched voice service;

obtaining at least one objective measurement from each of the received packetized voice ~~communication~~ communications;

creating a test matrix from the objective measurements;

providing an N dimensional reference matrix that mathematically models likely user perception of acceptable quality of voice service, the reference matrix being derived from a plurality of objective voice measurements known to affect user perception of voice quality, where N is greater than or equal to two;

~~deriving a user-perceived quality of voice data based on the at least one objective measurement~~ processing the test matrix to determine the quality of voice data over the packet-switched voice service, the quality of voice data over the packet-switched voice service being determined by comparing the reference matrix to the test matrix; and

~~providing outputting information regarding the user-perceived quality of voice data~~ over the packet-switched voice service.

where the receiving, obtaining, ~~deriving~~ processing, and ~~providing~~ outputting are performed in substantially real-time.

3. (currently amended) The method of claim ~~[[2]]~~ 1, further comprising:
generating at least one alarm in response to ~~[[the]]~~ processing the test matrix, the alarm being generated if the quality of voice over the packet-switched voice service is below a predetermined level.

7. (currently amended) The method of claim ~~[[2]]~~ 1, where providing the N dimensional reference matrix further comprises:

measuring the plurality of objective voice characteristics over a packet-switched voice service to obtain sample measurements;

post-processing the sample measurements to produce stable estimates of perceived voice quality; and

creating the reference matrix from the post-processed performance data.

8. (currently amended) The method of claim [[2]] 1, where processing the test matrix to determine the quality of voice data over the packet-switched voice service further comprises:

creating a reference pattern matrix, the reference pattern matrix embodying a comparison of the test data matrix and the reference matrix.

14. (currently amended) The method of claim [[2]] 1, where processing the test matrix to determine the quality of voice data over the packet-switched voice service further comprises:

computing a mean opinion score (MOS) corresponding to a subjective user evaluation of the quality of voice over the packet-switched voice service.

16. (currently amended) The method of claim [[2]] 1, further comprising:
storing the test data matrix and associated data created during the processing.

17. (currently amended) The method of claim [[2]] 1, further comprising:
defining a data structure for collecting and archiving annotated test data matrices.

19. (currently amended) The method of claim ~~[[2]]~~ 1, where the ~~plurality of test~~
objective measurements include measurements of ~~[[the]]~~ a plurality of objective voice
characteristics.

21. (currently amended) The method of claim 1, where obtaining the at least one
objective measurement from each of the received packetized voice ~~communication~~
communications, further comprises:

obtaining at least one objective measurement of a reconstituted digital
representation of the received packetized voice communication, the reconstituted digital
representation being obtained from a receiver codec.

23. (currently amended) The method of claim ~~[[22]]~~ 1, where ~~providing the user~~
~~perceived quality of voice data further~~ outputting the information regarding the quality of
voice data over the packet-switched voice service comprises:

transmitting the ~~user perceived quality of voice data~~ information regarding the
quality of voice data over the packet-switched voice service to a quality indicator
disposed in a user transceiver set.

24. (currently amended) The method of claim ~~[[22]]~~ 1, where ~~providing the user~~
~~perceived quality of voice data further~~ outputting the information regarding the quality of
voice data over the packet-switched voice service comprises:

transmitting the ~~user perceived quality of voice data~~ information regarding the quality of voice data over the packet-switched voice service to a network management system.

25. (currently amended) The method of claim ~~[[22]]~~ 1, where ~~providing the user perceived quality of voice data further~~ outputting the information regarding the quality of voice data over the packet-switched voice service comprises:

providing a raw distortion measurement.

26. (currently amended) The method of claim ~~[[22]]~~ 1, where ~~providing the user perceived quality of voice data further~~ outputting the information regarding the quality of voice data over the packet-switched voice service comprises:

providing a normalized score corresponding to ~~[[the]]~~ a distortion measurement.

27. (currently amended) The method of claim 22, where ~~providing the user perceived quality of voice data further~~ outputting the information regarding the quality of voice data over the packet-switched voice service comprises:

determining a kurtosis value of a distribution of the differences.

28. (currently amended) A system for monitoring a quality of a packet-switched voice service in a network, comprising:

a memory element configured to store an N dimensional reference matrix that mathematically models likely user perception of acceptable quality of voice service, the reference matrix being derived from a plurality of objective voice measurements known to affect user perception of voice quality, where N is greater than or equal to two;

a measurement probe configured to obtain a plurality of test measurements for each call placed over the packet-switched voice service; and

a computer coupled to the memory element and the measurement probe, the computer being configured to: [[,]]

derive a test matrix from the plurality of test measurements, [[and]]

process the test matrix, in near real time, to determine the quality of voice over the packet-switched voice service, the quality of voice over the packet-switched voice service being determined by comparing the reference matrix to the test matrix, and

output information regarding the quality of the voice over the packet-switched voice service.

46. (currently amended) The system of claim 45, ~~wherein~~ where the at least one indicator includes a mean opinion score (MOS).

47. (currently amended) The system of claim 45, where the at least one indicator includes a percentage of calls users would find unusable, difficult, or irritating P(UDI),

the P(UDI) corresponding to a subjective user evaluation of the quality of voice over the packet-switched voice service.

48. (currently amended) The system of claim 45, where the at least one indicator includes a distortion indicator.

50. (currently amended) ~~[[A]] An automated~~ A method, performed by one or more devices, for monitoring perceived quality of a packet-switched voice service in a network, the method comprising:

providing an N dimensional reference matrix that mathematically models likely user perception of acceptable quality of voice service, the reference matrix being derived from a plurality of objective voice measurements known to affect user perception of voice quality, where N is greater than or equal to two;

obtaining a plurality of test measurements for each call placed over the packet-switched voice service;

creating a test matrix from the plurality of test measurements; ~~[[and]]~~

processing the test matrix, in near real time, to determine the quality of voice data over the packet-switched voice service, the quality of voice data over the packet-switched voice service being determined by comparing the reference matrix to the test matrix; and

outputting information associated with the quality of voice data over the packet-switched voice service.

4. Claims 2 and 49 have been cancelled.

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHUNG-HOANG J. NGUYEN whose telephone number is (571)270-1949. The examiner can normally be reached on Monday to Thursday, 8:30AM - 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on 571 272 7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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